

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

PERMIT NO. F-06-012 R1
DANA Torque-Traction Technology, Inc
10000 Business Boulevard, Dry Ridge KY 41035
June 14, 2007
Frough Sherwani, Reviewer
Plant I.D. # 021-081-00019
AI # 4255
Activity # APE20070001

Revision 1 (Minor Revision):

On May 18, 2007, the source submitted a minor revision application to their conditional major permit F-06-012.

The source currently operates several assembly lines. As part of some lines, the facility paints the axles to inhibit corrosion during normal use. The plant is currently operating two flow coating lines (200 and 300) and four paint booths (100, 400, 500R, and 950). The source installed the latter lines as a part of a plant expansion in 2006.

The current source wide emission allowables for VOC is 90 tons per rolling 12-month period, 9 and 22.5 tons per rolling 12-month period for a single and combined HAPs respectively. These allowables will remain the same.

The source is proposing to remove two flow coater operations (Line 200 and 300) and replacing them with two (2) paint booths. Also, Line 600, that was a part of the original install, was never installed. However, this paint booth is now being installed in Line 300. The Line 300 upgrade is planned for mid May and the Line 200 install is planned for October 2007.

Line 200 Paint Line (Emission Point # 2):

The 200 Paint Line currently uses a water-based coating (DANA specification M2005, also known as Hunting 4601). The line currently has an aqueous wash (EU-02), a flow coater (EU-01) and a stop bolt welder (EU-42). The new line will retain the stop bolt welder, but the aqueous wash and flow coater will be replaced with a paint booth (EU-50). The upgrade to this line will include the installation of a new paint booth with an application process identical to the other paint booths already installed at the facility. The VOC-based paint is applied by a manually operated air-assisted spray gun.

Emissions from the spray booth will be filtered by a fiberglass filter and will be emitted through a roof stack. A estimated control efficiency of 90% is used. The axles will be air-dried. After coating, the facility attaches a stop bolt to each side of the axle using two gas-shielded welders. This change is projected for October 2007.

Line 300 Paint Line (Emission Point # 3)

The 300 Paint Line currently uses a water-based coating. The line currently has puddle welder (EU-09), an aqueous wash (EU-07), a flow coater (EU-08) and a cure oven (EU-05). The new line will retain the puddle welder, but the aqueous wash, flow coater and cure oven will be replaced with the paint booth originally permitted for line 600 (EU-35). The upgrade to this line will include the installation of a used paint booth that will be set off to the side while the flow coater is taken off line. This arrangement will allow the facility to continue to use the puddle welder while the dismantling takes place. Once the axles have been welded, they will be transferred to a spray booth where they will be coated. Installation will begin May 16, 2007.

The Division has also decided to incorporate a previous “off permit change” determination (issued on September 15, 2006) into this minor revision determination. Four (4) new parts washers, eight (8) existing parts washers were added to Section C (Insignificant activities) and three (3) new dock heaters were added to Section B.

Finally, the Division has also decided to change the language in section B (2) (d):

From:

Compliance Demonstration Method:

Compliance with the mass emission limitation is assumed when the filters are in operation, according to manufacturer’s recommendations

To:

Compliance Demonstration Method:

1. Filters shall be in place at all times the machine is applying paint.
2. Filters shall be replaced when determined to be inefficient (as determined through visual inspection).
3. Demonstrate that all particulate filters are in place whenever a spray booth is in operation. When filters are in place and functional, compliance is assumed.

Initial Issuance (F-06-012)

The DANA Torque-Traction Technology, Inc assembles lightweight vehicle axles used in vans, trucks, and sport utility at its facility at 10000 Business Blvd, Dry Ridge (Grant County), Kentucky. The source is a minor source, which is registered with the Division pursuant to 40 KAR 52:070

The source operates several assembly lines, some of which have no air emissions. As part of some lines, the source paints the axles to inhibit corrosion during normal use. The source is currently operating four assembly lines that include painting as part of the process. The lines (200, 300, 400) use a water based coating that contains low levels of VOC. A fourth line (line 100) uses a VOC based coating. The source’s current potential-to-emit calculations are well below major source thresholds, and the source is therefore a registered minor source. The source is planning an expansion of plant by incorporating four new process lines which are currently located at the source’s Buena Vista, Virginia. These new lines will include paint booth that uses a VOC based – coating, as a result the source’s potential-to-emit will exceed 100 tons per year of both VOCs and particulate matter, and 10 tons per year of for toluene (HAP). Operating records from Buena Vista plant indicates that actual emissions are below major source thresholds.

Therefore, On February 7, 2006, the source has applied to the Division for the conditional major permit.

Coating Usage Calculations:

EP 01 (Line 100):

Line 100 uses a manual conveyor system, where the axle is advanced by the operator pulling the axle from the assembly line and positioning it in the spray booth. This procedure takes approximately 10 seconds. Axles painted in this line require a minimum of 25 seconds to fully coat. Another 5 seconds are used to pull the painted axle out of the booth where it can be removed and placed into the shipping rack. Total cycle time for one axle is 40 seconds, which converts to a maximum hourly production rate of 90 axles per hour, and an annual rate of 788.4 thousand axles per line.

The actual annual usage for the high-VOC coating used in all five lines was 18,592 gallons. This amount of coating was used to paint a total of 445,566 axles, for a usage rate of 41.7 gallons per thousand axles.

The maximum hourly coating usage per line would therefore be calculated as follows:

$$\begin{aligned}\text{Maximum hourly production} &= 90 \text{ axles/hr} = 0.090 \text{ k-axles/hr} \\ \text{Coating Usage} &= 41.7 \text{ gal/k-axle} * 0.090 \text{ k-axles/hr} = 3.8 \text{ gal/hr}\end{aligned}$$

EP 5, 6, 7, and 8 (Lines 400, 500R, 600 and 650):

These paint lines each have a power free conveyor system that moves the axle into and out of the paint booth. The operator presses a release button to initiate the cycle. At this point, the conveyor moves a new axle into the paint booth while at the same time moving the painted axle out of the booth ready to be loaded onto racks. The line speed for the conveyor is 30 feet per minute. The distance from the on deck stop to the stop in the paint booth is 13 '10". According to BV data, the axle takes 26 seconds to move into the paint booth (based on a conveyor speed of 0.5 feet per second X 13 feet, with no waiting time for the conveyor to begin moving the axle). The minimum time to paint an axle in these lines is 29 seconds. Total cycle time for one axle is therefore 55 seconds, which converts to a maximum hourly production rate of 65.5 axles per hour, and an annual rate of 573.8 thousand axles per line.

The actual annual usage for the high-VOC coating used in all five lines was 18,592 gallons. This amount of coating was used to paint a total of 445,566 axles, for a usage rate of 41.7 gallons per thousand axles.

The maximum hourly coating usage per line would therefore be calculated as follows:

$$\begin{aligned}\text{Maximum hourly production} &= 65.5 \text{ axles/hr} = 0.0665 \text{ k-axles/hr} \\ \text{Coating Usage} &= 41.7 \text{ gal/k-axle} * 0.066 \text{ k-axles/hr} = 2.7 \text{ gal/hr}\end{aligned}$$

Type Of Control And Efficiency:

Spray paint booths at emission points 1, 2, 3 4, have fiberglass filters to control particulate matter. The control efficiency of the filters are assumed to be 90%.

Spray paint booths at emission points 5, 6, 7, and 8 will have fiberglass filters to control particulate matter. The control efficiency of the filters are assumed to be 90%.

Welding operations at emission points 1, 3, and 4 have cyclone dust collectors to control particulate matter. The control efficiency of the cyclone are assumed to be 75%

Welding operations at emission points 5, 6, 7 and 8 will have cartridge filter dust collector to control particulate matter. The control efficiency of the cyclone are assumed to be 90%.

Emission Factors And Their Source:

AP –42 5th edition, and mass balance are used for the emission factors for PM, VOC and HAP'S.

Applicable Regulations:

- a. **401 KAR 59:010**, New Process Operations (applicable to each affected facility associated with a process operation commenced on or after July 2, 1975);
- b. **401 KAR 63:020**; Potentially hazardous matter or toxic substances, applicable to each affected facility, which emits or may emit potentially hazardous matter or toxic substances.
- c. **401 KAR 52:030**. Federally enforceable permits for non-major sources.

Precluded Regulations:

40 CFR 63 Subpart MMMM- National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metals Parts and Products.

Emission And Operating Caps:

1. The source has accepted a facility-wide cap on annual VOC emissions of no more than 90 tons per rolling 12-month period. Compliance with this allowable will be demonstrated by record keeping and emissions estimating methodology specified in the terms and conditions of the permit.
2. The source has accepted a facility-wide cap on annual individual HAP emission of no more than 9.0 tons per rolling 12-month period. Compliance with this allowable will be demonstrated by record keeping and emissions estimating methodology specified in the terms and conditions of the permit.
3. The source has accepted a facility-wide cap on annual combined HAPS emissions of no more than 22.5 tons per rolling 12-month period. Compliance with this allowable will be demonstrated by record keeping and emissions estimating methodology specified in the terms and conditions of the permit.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.